Status Report

Phase II DNR Field Program/Results of Interspecies Testing

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Status

Contamination of marine and estuarine sediment by tributyltin (TBT) and other contaminants of concern, for example, polynuclear aromatic hydrocarbons (PAHs), pesticides, polychlorinated biphenyls (PCBs) is a serious concern for the management of sediment in Puget Sound. Several studies have been conducted in the Puget Sound confirming that TBT is present in sediment. Studies conducted by Meador (1993a, 1993b, 1997a, 1997b) and others provide valuable information about amphipod sensitivity to TBT. However, current toxicity tests approved by the Puget Sound Dredge Disposal Analysis (PSDDA, 1988) may not be sufficiently sensitive to adequately assess the environmental risk posed by persistent chemicals like TBT, particularly sublethal effects caused by chronic exposure.

This project focused on the use field-collected sediment from Puget Sound to determine the comparative sensitivities of two standard toxicity tests (10-day amphipod mortality, , and the juvenile polychaete growth test) with the 28-day *L. plumulosus* chronic test (measuring mortality, growth, and reproduction). The experiment was performed using sediments contaminated to varying degrees with a mixture of compounds .

Sediment from eight field sites was collected, composited, and submitted for chemical analysis. Based on the chemical screen, five sites were chosen for toxicological evaluations. The toxicity experiments followed the EPA protocol for the 28-d full life cycle chronic *Leptocheirus plumulosus* test (EPA/600/R-01/020) and the PSEP protocols for the10-d acute amphipod sediment toxicity test with *Eohaustorius estuarius* (PSEP 1991) and the 20-d growth test with *Neanthes arenaceodentata*.

The results from each of the three toxicity tests were compared to determine the relative sensitivity of each species and the different endpoints to the field collected sediment.